

SEQUENCE LISTING

<110> Wilson, James M.
Xiao, Weidong

<120> Adeno-Associated Virus Serotype I Nucleic Acid Sequences,
Vectors and Host Cells Containing Same

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<140> US 09/807,802
<141> 2001-04-17

<150> US 60/107,114
<151> 1998-11-05

<150> PCT/US99/25694
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Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
20 25 30
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
35 40 45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
50 55 60
Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65 70 75 80
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
85 90 95
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
100 105 110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
115 120 125
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
130 135 140
Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145 150 155 160
Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
165 170 175
Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
180 185 190
Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
195 200 205
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
210 215 220
Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225 230 235 240
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
245 250 255
Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
260 265 270
Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
275 280 285
His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
290 295 300
Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln

	305	310	315	320
Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn				
325	330	335		
Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro				
340	345	350		
Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala				
355	360	365		
Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly				
370	375	380		
Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro				
385	390	395		400
Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe				
405	410	415		
Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp				
420	425	430		
Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg				
435	440	445		
Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser				
450	455	460		
Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro				
465	470	475		480
Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn				
485	490	495		
Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn				
500	505	510		
Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys				
515	520	525		
Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly				
530	535	540		
Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile				
545	550	555		560
Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg				
565	570	575		
Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala				
580	585	590		
Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln				
595	600	605		
Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His				
610	615	620		
Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu				

625	630	635	640
Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys	Asn Thr Pro Val Pro Ala		
645	650	655	
Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys	Phe Ala Ser Phe Ile Thr		
660	665	670	
Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu	Trp Glu Leu Gln		
675	680	685	
Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln	Tyr Thr Ser Asn		
690	695	700	
Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp	Asn Asn Gly Leu		
705	710	715	720
Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr	Leu Thr Arg Pro Leu		
725	730	735	

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp	Leu Asp			
1	5	10	15	
gag cac ctg ccg ggc att tct gac tcg ttt gtg agc tgg	gtg gcc gag			96
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp	Val Ala Glu			
20	25	30		
aag gaa tgg gag ctg ccc ccg gat tct gac atg gat	ctg aat ctg att			144
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn	Leu Ile			
35	40	45		
gag cag gca ccc ctg acc gtg gcc gag aag ctg cag	cgcc gac ttc ctg			192
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp	Phe Leu			
50	55	60		
gtc caa tgg cgc cgc gtg agt aag gcc ccg gag	gcc ctc ttc ttt gtt			240
Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe	Phe Val			
65	70	75	80	
cag ttc gag aag ggc gag tcc tac ttc cac ctc cat att	ctg gtg gag			288
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile	Leu Val Glu			
85	90	95		
acc acg ggg gtc aaa tcc atg gtg ctg ggc cgc ttc	ctg agt cag att			336
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe	Leu Ser Gln Ile			
100	105	110		

agg gac aag ctg gtg cag acc atc tac cgc ggg atc gag ccg acc ctg	384
Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu	
115 120 125	
ccc aac tgg ttc gcg gtg acc aag acg cgt aat ggc gcc gga ggg ggg	432
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly	
130 135 140	
aac aag gtg gtg gac gag tgc tac atc ccc aac tac ctc ctg ccc aag	480
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys	
145 150 155 160	
act cag ccc gag ctg cag tgg gcg tgg act aac atg gag gag tat ata	528
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile	
165 170 175	
agc gcc tgt ttg aac ctg gcc gag cgc aaa cgg ctc gtg gcg cag cac	576
Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His	
180 185 190	
ctg acc cac gtc agc cag acc cag gag cag aac aag gag aat ctg aac	624
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn	
195 200 205	
ccc aat tct gac gcg cct gtc atc cgg tca aaa acc tcc gcg cgc tac	672
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr	
210 215 220	
atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag	720
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys	
225 230 235 240	
cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct	768
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala	
245 250 255	
tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag	816
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys	
260 265 270	
atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct	864
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala	
275 280 285	
ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg	912
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu	
290 295 300	
aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc	960
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala	
305 310 315 320	
cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc	1008
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala	
325 330 335	
acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc	1056
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro	
340 345 350	

ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp 355 360 365	1104
tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala 370 375 380	1152
aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg 385 390 395 400	1200
gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val 405 410 415	1248
atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser 420 425 430	1296
acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe 435 440 445	1344
gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln 450 455 460	1392
gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg Glu Val Lys Glu Phe Arg Trp Ala Gln Asp His Val Thr Glu Val 465 470 475 480	1440
gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc Ala His Glu Phe Tyr Val Arg Lys Gly Ala Asn Lys Arg Pro Ala 485 490 495	1488
ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val 500 505 510	1536
gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala 515 520 525	1584
gac agg tac caa aac aaa tgt tct cgt cac gcg ggc atg ctt cag atg Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met 530 535 540	1632
ctg ttt ccc tgc aag aca tgc gag aga atg aat cag aat ttc aac att Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile 545 550 555 560	1680
tgc ttc acg cac ggg acg aga gac tgt tca gag tgc ttc ccc ggc gtg Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val 565 570 575	1728
tca gaa tct caa ccg gtc gtc aga aag agg acg tat cgg aaa ctc tgt Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys 580 585 590	1776

gcc att cat cat ctg ctg ggg cg	gct ccc gag att gct tgc tcg gcc	1824	
Ala Ile His His Leu Leu Gly Arg	Ala Pro Glu Ile Ala Cys Ser Ala		
595	600	605	
tgc gat ctg gtc aac gtg gac ctg gat gac tgt gtt tct gag caa taa		1872	
Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln			
610	615	620	
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<213> AAV-1			
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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp			
1	5	10	15
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu			
20	25	30	
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile			
35	40	45	
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu			
50	55	60	
Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val			
65	70	75	80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu			
85	90	95	
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile			
100	105	110	
Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu			
115	120	125	
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly			
130	135	140	
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys			
145	150	155	160
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile			
165	170	175	
Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His			
180	185	190	
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn			
195	200	205	
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr			
210	215	220	
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys			
225	230	235	240

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
245 250 255

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
260 265 270

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
275 280 285

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
290 295 300

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305 310 315 320

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
325 330 335

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
340 345 350

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
355 360 365

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
370 375 380

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385 390 395 400

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
405 410 415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
420 425 430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
435 440 445

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
450 455 460

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465 470 475 480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
485 490 495

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
500 505 510

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
515 520 525

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
530 535 540

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
545 550 555 560

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
565 570 575

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
580 585 590

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
595 600 605

Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
610 615 620

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<211> 1641

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<213> AAV-1

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<221> CDS

<222> (1)..(1638)

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1 5 10 15

gag cac ctg ccg ggc att tct gac tcg ttt gtg agc tgg gtg gcc gag 96
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
20 25 30

aag gaa tgg gag ctg ccc ccg gat tct gac atg gat ctg aat ctg att 144
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
35 40 45

gag cag gca ccc ctg acc gtg gcc gag aag ctg cag ccg gac ttc ctg 192
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
50 55 60

gtc caa tgg cgc cgc gtg agt aag gcc ccg gag gcc ctc ttc ttt gtt 240
Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65 70 75 80

cag ttc gag aag ggc gag tcc tac ttc cac ctc cat att ctg gtg gag 288
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
85 90 95

acc acg ggg gtc aaa tcc atg gtg ctg ggc ccg ttc ctg agt cag att 336
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
100 105 110

agg gac aag ctg gtg cag acc atc tac ccg ggg atc gag ccg acc ctg 384
Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
115 120 125

ccc aac tgg ttc gcg gtg acc aag acg cgt aat ggc gcc gga ggg ggg 432
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
130 135 140

aac aag gtg gtg gac gag tgc tac atc ccc aac tac ctc ctg ccc aag	480
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys	
145 150 155 160	
act cag ccc gag ctg cag tgg gcg tgg act aac atg gag gag tat ata	528
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile	
165 170 175	
agc gcc tgt ttg aac ctg gcc gag cgc aaa cgg ctc gtg gcg cag cac	576
Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His	
180 185 190	
ctg acc cac gtc agc cag acc cag gag cag aac aag gag aat ctg aac	624
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn	
195 200 205	
ccc aat tct gac gcg cct gtc atc cgg tca aaa acc tcc gcg cgc tac	672
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr	
210 215 220	
atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag	720
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys	
225 230 235 240	
cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct	768
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala	
245 250 255	
tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag	816
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys	
260 265 270	
atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct	864
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala	
275 280 285	
ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg	912
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu	
290 295 300	
aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc	960
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala	
305 310 315 320	
cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc	1008
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala	
325 330 335	
acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc	1056
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro	
340 345 350	
ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat	1104
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp	
355 360 365	
tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc	1152
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala	
370 375 380	

aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc	1200
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg	
385 390 395 400	
gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg	1248
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val	
405 410 415	
atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc	1296
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser	
420 425 430	
acc acc ttc gag cac cag cag ccg ttg cag gac cg ^g atg ttc aaa ttt	1344
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe	
435 440 445	
gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag	1392
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln	
450 455 460	
gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg	1440
Glu Val Lys Glu Phe Arg Trp Ala Gln Asp His Val Thr Glu Val	
465 470 475 480	
g ^c g cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc	1488
Ala His Glu Phe Tyr Val Arg Lys Gly Ala Asn Lys Arg Pro Ala	
485 490 495	
ccc gat gac g ^c g gat aaa agc gag ccc aag cg ^g gcc tgc ccc tca gtc	1536
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val	
500 505 510	
g ^c g gat cca tcg acg tca gac g ^c g gaa gga gct ccg gtg gac ttt gcc	1584
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala	
515 520 525	
gac agg tat ggc tgc cga tgg tta tct tcc aga ttg gct cga gga caa	1632
Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln	
530 535 540	
cct ctc tga	1641
Pro Leu	
545	
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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp	
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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu	
20 25 30	
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile	
35 40 45	

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
50 55 60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65 70 75 80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
85 90 95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
100 105 110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
115 120 125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly
130 135 140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145 150 155 160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
165 170 175

Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
180 185 190

Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
195 200 205

Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
210 215 220

Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225 230 235 240

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
245 250 255

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
260 265 270

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
275 280 285

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
290 295 300

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305 310 315 320

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
325 330 335

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
340 345 350

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
355 360 365

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
 465 470 475 480
 Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
 485 490 495
 Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
 500 505 510
 Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
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 Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln
 530 535 540
 Pro Leu
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 cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct 96
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag 144
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45

atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala 50 55 60	192
ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu 65 70 75 80	240
aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala 85 90 95	288
cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala 100 105 110	336
acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro 115 120 125	384
ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp 130 135 140	432
tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala 145 150 155 160	480
aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg 165 170 175	528
gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val 180 185 190	576
atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser 195 200 205	624
acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe 210 215 220	672
gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln 225 230 235 240	720
gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val 245 250 255	768
gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala 260 265 270	816
ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val 275 280 285	864

gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc	912
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala	
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gac agg tac caa aac aaa tgt tct cgt cac gcg ggc atg ctt cag atg	960
Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met	
305 310 315 320	
ctg ttt ccc tgc aag aca tgc gag aga atg aat cag aat ttc aac att	1008
Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile	
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Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val	
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Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys	
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gcc att cat cat ctg ctg ggg cggt gct ccc gag att gct tgc tgc gcc	1152
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Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala	
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Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu	
65 70 75 80	
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala	
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Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala	
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Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro	
115 120 125	
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp	

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145	150	155
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg		
165	170	175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val		
180	185	190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser		
195	200	205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe		
210	215	220
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln		
225	230	235
Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val		
245	250	255
Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala		
260	265	270
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val		
275	280	285
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala		
290	295	300
Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met		
305	310	315
Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile		
325	330	335
Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val		
340	345	350
Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys		
355	360	365
Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala		
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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
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tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag 144
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45

atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct 192
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
50 55 60

ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg 240
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
65 70 75 80

aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc 288
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
85 90 95

cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc 336
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110

acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc 384
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
115 120 125

ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat 432
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140

tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc 480
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160

aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc 528
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175

gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg 576
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190

atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc 624
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205

acc acc ttc gag cac cag cag ccg ttg cag qac cgg atg ttc aaa ttt 672

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225					230					235				240		
gaa	gtc	aaa	gag	ttc	ttc	cgc	tgg	gcg	cag	gat	cac	gtg	acc	gag	gtg	768
Glu	Val	Lys	Glu	Phe	Phe	Arg	Trp	Ala	Gln	Asp	His	Val	Thr	Glu	Val	
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gcg	cat	gag	ttc	tac	gtc	aga	aag	ggt	gga	gcc	aac	aaa	aga	ccc	gcc	816
Ala	His	Glu	Phe	Tyr	Val	Arg	Lys	Gly	Gly	Ala	Asn	Lys	Arg	Pro	Ala	
					260					265				270		
ccc	gat	gac	gcg	gat	aaa	agc	gag	ccc	aag	cg	gcc	tgc	ccc	tca	gtc	864
Pro	Asp	Asp	Ala	Asp	Lys	Ser	Glu	Pro	Lys	Arg	Ala	Cys	Pro	Ser	Val	
					275					280				285		
gcg	gat	cca	tcg	acg	tca	gac	gcg	gaa	gga	gct	ccg	gtg	gac	ttt	gcc	912
Ala	Asp	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Gly	Ala	Pro	Val	Asp	Phe	Ala	
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gac	agg	tat	ggc	tgc	cga	tgg	tta	tct	tcc	aga	ttg	gct	cga	gga	caa	960
Asp	Arg	Tyr	Gly	Cys	Arg	Trp	Leu	Ser	Ser	Arg	Leu	Ala	Arg	Gly	Gln	
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cct	ctc	tga														969
Pro	Leu															

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Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
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Ile	Met	Ala	Leu	Thr	Lys	Ser	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Pro	Ala	
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Pro	Pro	Ala	Asp	Ile	Lys	Thr	Asn	Arg	Ile	Tyr	Arg	Ile	Leu	Glu	Leu	
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Asn	Gly	Tyr	Glu	Pro	Ala	Tyr	Ala	Gly	Ser	Val	Phe	Leu	Gly	Trp	Ala	
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Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
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 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
 245 250 255
 Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
 260 265 270
 Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
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Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro				
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aaa gcc aac cag caa aag cag gac gac ggc cgg ggt ctg gtg ctt cct				144
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro				
35	40	45		
ggc tac aag tac ctc gga ccc ttc aac gga ctc gac aag ggg gag ccc				192
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro				
50	55	60		
gtc aac gcg gcg gac gca gcg gcc ctc gag cac gac aag gcc tac gac				240
Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp				
65	70	75	80	
cag cag ctc aaa gcg ggt gac aat ccg tac ctg cgg tat aac cac gcc				288
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala				
85	90	95		
gac gcc gag ttt cag gag cgt ctg caa gaa gat acg tct ttt ggg ggc				336
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly				
100	105	110		
aac ctc ggg cga gca gtc ttc cag gcc aag aag cgg gtt ctc gaa cct				384
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro				
115	120	125		
ctc ggt ctg gtt gag gaa ggc gct aag acg gct cct gga aag aaa cgt				432
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg				
130	135	140		
ccg gta gag cag tcg cca caa gag cca gac tcc tcc tcg ggc atc ggc				480
Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly				
145	150	155	160	
aag aca ggc cag cag ccc gct aaa aag aga ctc aat ttt ggt cag act				528
Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr				
165	170	175		
ggc gac tca gag tca gtc ccc gat cca caa cct ctc gga gaa cct cca				576
Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro				
180	185	190		
gca acc ccc gct gct gtg gga cct act aca atg gct tca ggc ggt ggc				624
Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly				
195	200	205		
gca cca atg gca gac aat aac gaa ggc gcc gac gga gtg ggt aat gcc				672
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala				
210	215	220		
tca gga aat tgg cat tgc gat tcc aca tgg ctg ggc gac aga gtc atc				720
Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile				
225	230	235	240	
acc acc agc acc cgc acc tgg gcc ttg ccc acc tac aat aac cac ctc				768
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu				

	245	250	255	
tac aag caa atc tcc agt gct tca acg ggg gcc agc aac gac aac cac Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His	260	265	270	816
tac ttc ggc tac agc acc ccc tgg ggg tat ttt gat ttc aac aga ttc Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe	275	280	285	864
cac tgc cac ttt tca cca cgt gac tgg cag cga ctc atc aac aac aat His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn	290	295	300	912
tgg gga ttc cgg ccc aag aga ctc aac ttc aaa ctc ttc aac atc caa Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln	305	310	315	960
gtc aag gag gtc acg acg aat gat ggc gtc aca acc atc gct aat aac Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn	325	330	335	1008
ctt acc agc acg gtt caa gtc ttc tcg gac tcg gag tac cag ctt ccg Leu Thr Ser Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro	340	345	350	1056
tac gtc ctc ggc tct gcg cac cag ggc tgc ctc cct ccg ttc ccg gcg Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala	355	360	365	1104
gac gtg ttc atg att ccg caa tac ggc tac ctg acg ctc aac aat ggc Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly	370	375	380	1152
agc caa gcc gtg gga cgt tca tcc ttt tac tgc ctg gaa tat ttc cct Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro	385	390	395	1200
tct cag atg ctg aga acg ggc aac aac ttt acc ttc agc tac acc ttt Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe	405	410	415	1248
gag gaa gtg cct ttc cac agc agc tac gcg cac agc cag agc ctg gac Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp	420	425	430	1296
cgg ctg atg aat cct ctc atc gac caa tac ctg tat tac ctg aac aga Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg	435	440	445	1344
act caa aat cag tcc gga agt gcc caa aac aag gac ttg ctg ttt agc Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser	450	455	460	1392
cgt ggg tct cca gct ggc atg tct gtt cag ccc aaa aac tgg cta cct Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro	465	470	475	1440
gga ccc tgt tat cgg cag cag cgc gtt tct aaa aca aaa aca gac aac Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn				1488

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aca gat gga cac ttt cac ccg tct cct ctt atg ggc ggc ttt gga ctc Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu 625 630 635 640			1920
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caa tac tcc aca gga caa gtg agt gtg gaa att gaa tgg gag ctg cag Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln 675 680 685			2064
aaa gaa aac agc aag cgc tgg aat ccc gaa gtg cag tac aca tcc aat Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn 690 695 700			2112
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725

730

735

taa

2211

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 35 40 45
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
 50 55 60
 Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
 65 70 75 80
 Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
 85 90 95
 Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
 100 105 110
 Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
 115 120 125
 Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
 130 135 140
 Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
 145 150 155 160
 Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
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 Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
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 Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
 195 200 205
 Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
 210 215 220
 Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
 225 230 235 240
 Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
 245 250 255
 Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His

260

265

270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
 275 280 285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
 290 295 300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
 305 310 315 320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
 325 330 335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
 340 345 350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
 355 360 365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
 370 375 380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
 385 390 395 400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
 405 410 415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
 420 425 430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
 435 440 445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
 450 455 460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
 465 470 475 480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
 485 490 495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
 500 505 510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
 515 520 525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
 530 535 540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
 545 550 555 560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
 565 570 575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala

580	585	590	
Thr Gly Asp Val His Ala Met	Gly Ala Leu Pro Gly Met Val Trp Gln		
595	600	605	
Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His			
610	615	620	
Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu			
625	630	635	640
Lys Asn Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala			
645	650	655	
Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr			
660	665	670	
Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln			
675	680	685	
Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn			
690	695	700	
Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu			
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Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu			
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Thr Ala Pro Gly Lys Lys Arg Pro Val Glu Gln Ser Pro Gln Glu Pro		
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gac tcc tcc tcg ggc atc ggc aag aca ggc cag cag ccc gct aaa aag		
Asp Ser Ser Ser Gly Ile Gly Lys Thr Gly Gln Gln Pro Ala Lys Lys		
20 25 30		
aga ctc aat ttt ggt cag act ggc gac tca gag tca gtc ccc gat cca		
Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser Val Pro Asp Pro		
35 40 45		
caa cct ctc gga gaa cct cca gca acc ccc gct gct gtg gga cct act		
Gln Pro Leu Gly Glu Pro Pro Ala Thr Pro Ala Ala Val Gly Pro Thr		
50 55 60		
aca atg gct tca ggc ggt ggc gca cca atg gca gac aat aac gaa ggc		
Thr Met Ala Ser Gly Gly Ala Pro Met Ala Asp Asn Asn Glu Gly		
65 70 75 80		

gcc gac gga gtg ggt aat gcc tca gga aat tgg cat tgc gat tcc aca Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr 85 90 95	288
tgg ctg ggc gac aga gtc atc acc acc agc acc cgc acc tgg gcc ttg Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu 100 105 110	336
ccc acc tac aat aac cac ctc tac aag caa atc tcc agt gct tca acg Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr 115 120 125	384
ggg gcc agc aac gac aac cac tac ttc ggc tac agc acc ccc tgg ggg Gly Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly 130 135 140	432
tat ttt gat ttc aac aga ttc cac tgc cac ttt tca cca cgt gac tgg Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp 145 150 155 160	480
cag cga ctc atc aac aac aat tgg gga ttc cgg ccc aag aga ctc aac Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn 165 170 175	528
ttc aaa ctc ttc aac atc caa gtc aag gag gtc acg acg aat gat ggc Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly 180 185 190	576
gtc aca acc atc gct aat aac ctt acc agc acg gtt caa gtc ttc tcg Val Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser 195 200 205	624
gac tcg gag tac cag ctt ccg tac gtc ctc ggc tct gcg cac cag ggc Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly 210 215 220	672
tgc ctc cct ccg ttc ccg gcg gac gtg ttc atg att ccg caa tac ggc Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly 225 230 235 240	720
tac ctg acg ctc aac aat ggc agc caa gcc gtg gga cgt tca tcc ttt Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe 245 250 255	768
tac tgc ctg gaa tat ttc cct tct cag atg ctg aga acg ggc aac aac Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn 260 265 270	816
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gcg cac agc cag agc ctg gac cgg ctg atg aat cct ctc atc gac caa Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln 290 295 300	912
tac ctg tat tac ctg aac aga act caa aat cag tcc gga agt gcc caa Tyr Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln 305 310 315 320	960

aac aag gac ttg ctg ttt agc cgt ggg tct cca gct ggc atg tct gtt		1008	
Asn Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val			
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cag ccc aaa aac tgg cta cct gga ccc tgt tat cgg cag cag cgc gtt		1056	
Gln Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val			
340	345	350	
tct aaa aca aaa aca gac aac aac agc aat ttt acc tgg act ggt		1104	
Ser Lys Thr Lys Thr Asp Asn Asn Ser Asn Phe Thr Trp Thr Gly			
355	360	365	
gct tca aaa tat aac ctc aat ggg cgt gaa tcc atc atc aac cct ggc		1152	
Ala Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly			
370	375	380	
act gct atg gcc tca cac aaa gac gac gaa aag ttc ttt ccc atg		1200	
Thr Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met			
385	390	395	400
agc ggt gtc atg att ttt gga aaa gag agc gcc gga gct tca aac act		1248	
Ser Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr			
405	410	415	
gca ttg gac aat gtc atg att aca gac gaa gag gaa att aaa gcc act		1296	
Ala Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr			
420	425	430	
aac cct gtg gcc acc gaa aga ttt ggg acc gtg gca gtc aat ttc cag		1344	
Asn Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln			
435	440	445	
agc agc agc aca gac cct gcg acc gga gat gtg cat gct atg gga gca		1392	
Ser Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala			
450	455	460	
tta cct ggc atg gtg tgg caa gat aga gac gtg tac ctg cag ggt ccc		1440	
Leu Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro			
465	470	475	480
att tgg gcc aaa att cct cac aca gat gga cac ttt cac ccg tct cct		1488	
Ile Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro			
485	490	495	
ctt atg ggc ggc ttt gga ctc aag aac ccg cct cct cag atc ctc atc		1536	
Leu Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Gln Ile Leu Ile			
500	505	510	
aaa aac acg cct gtt cct gcg aat cct ccg gcg gag ttt tca gct aca		1584	
Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr			
515	520	525	
aag ttt gct tca ttc atc acc caa tac tcc aca gga caa gtg agt gtg		1632	
Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val			
530	535	540	
gaa att gaa tgg gag ctg cag aaa gaa aac agc aag cgc tgg aat ccc		1680	
Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro			
545	550	555	560

gaa gtg cag tac aca tcc aat tat gca aaa tct gcc aac gtt gat ttt	1728
Glu Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe	
565 570 575	
act gtg gac aac aat gga ctt tat act gag cct cgc ccc att ggc acc	1776
Thr Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr	
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cgt tac ctt acc cgt ccc ctg taa	1800
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Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser Val Pro Asp Pro	
35 40 45	
Gln Pro Leu Gly Glu Pro Pro Ala Thr Pro Ala Ala Val Gly Pro Thr	
50 55 60	
Thr Met Ala Ser Gly Gly Ala Pro Met Ala Asp Asn Asn Glu Gly	
65 70 75 80	
Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr	
85 90 95	
Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu	
100 105 110	
Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr	
115 120 125	
Gly Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly	
130 135 140	
Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp	
145 150 155 160	
Gln Arg Leu Ile Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn	
165 170 175	
Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly	
180 185 190	
Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser	
195 200 205	
Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly	

210 215 220

Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly
225 230 235 240

Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe
245 250 255

Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn
260 265 270

Phe Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr
275 280 285

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
290 295 300

Tyr Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln
305 310 315 320

Asn Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val
325 330 335

Gln Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val
340 345 350

Ser Lys Thr Lys Thr Asp Asn Asn Ser Asn Phe Thr Trp Thr Gly
355 360 365

Ala Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly
370 375 380

Thr Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met
385 390 395 400

Ser Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr
405 410 415

Ala Leu Asp Asn Val Met Ile Thr Asp Glu Glu Ile Lys Ala Thr
420 425 430

Asn Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln
435 440 445

Ser Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala
450 455 460

Leu Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro
465 470 475 480

Ile Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro
485 490 495

Leu Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile
500 505 510

Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr
515 520 525

Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val

530	535	540	
Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro			
545	550	555	560
Glu Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe			
565	570	575	
Thr Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr			
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gac gga gtg ggt aat gcc tca gga aat tgg cat tgc gat tcc aca tgg			96
Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp			
20	25	30	
ctg ggc gac aga gtc atc acc acc agc acc cgc acc tgg gcc ttg ccc			144
Leu Gly Asp Arg Val Ile Thr Ser Thr Arg Thr Trp Ala Leu Pro			
35	40	45	
acc tac aat aac cac ctc tac aag caa atc tcc agt gct tca acg ggg			192
Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly			
50	55	60	
gcc agc aac gac aac cac tac ttc ggc tac agc acc ccc tgg ggg tat			240
Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr			
65	70	75	80
ttt gat ttc aac aga ttc cac tgc cac ttt tca cca cgt gac tgg cag			288
Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln			
85	90	95	
cga ctc atc aac aac aat tgg gga ttc cgg ccc aag aga ctc aac ttc			336
Arg Leu Ile Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe			
100	105	110	
aaa ctc ttc aac atc caa gtc aag gag gtc acg acg aat gat ggc gtc			384
Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val			
115	120	125	
aca acc atc gct aat aac ctt acc agc acg gtt caa gtc ttc tcg gac			432
Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp			

130	135	140	
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ctc cct ccg ttc ccg gcg gac gtg ttc atg att ccg caa tac ggc tac Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr 165 170 175			528
ctg acg ctc aac aat ggc agc caa gcc gtg gga cgt tca tcc ttt tac Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr 180 185 190			576
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acc ttc agc tac acc ttt gag gaa gtg cct ttc cac agc agc tac gcg Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala 210 215 220			672
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gct atg gcc tca cac aaa gac gac gaa gac aag ttc ttt ccc atg agc Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser 325 330 335			1008
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ttg gac aat gtc atg att aca gac gaa gag gaa att aaa gcc act aac Leu Asp Asn Val Met Ile Thr Asp Glu Glu Ile Lys Ala Thr Asn 355 360 365			1104
cct gtg gcc acc gaa aga ttt ggg acc gtg gca gtc aat ttc cag agc Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser			1152

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cct ggc atg gtg tgg caa gat aga gac gtg tac ctg cag ggt ccc att Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile 405 410 415			1248
tgg gcc aaa att cct cac aca gat gga cac ttt cac ccg tct cct ctt Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu 420 425 430			1296
atg ggc ggc ttt gga ctc aag aac ccg cct cct cag atc ctc atc aaa Met Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys 435 440 445			1344
aac acg cct gtt cct gcg aat cct ccg gcg gag ttt tca gct aca aag Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys 450 455 460			1392
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gtg cag tac aca tcc aat tat gca aaa tct gcc aac gtt gat ttt act Val Gln Tyr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr 500 505 510			1536
gtg gac aac aat gga ctt tat act gag cct cgc ccc att ggc acc cgt Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg 515 520 525			1584
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Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr
65 70 75 80

Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln
85 90 95

Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe
100 105 110

Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val
115 120 125

Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp
130 135 140

Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys
145 150 155 160

Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr
165 170 175

Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr
180 185 190

Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe
195 200 205

Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala
210 215 220

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
225 230 235 240

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
245 250 255

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
260 265 270

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
275 280 285

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
290 295 300

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
305 310 315 320

Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser
325 330 335

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
340 345 350

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
355 360 365

Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser
370 375 380

Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala Leu
 385 390 395 400
 Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
 405 410 415
 Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
 420 425 430
 Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys
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 Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys
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 Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu
 465 470 475 480
 Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu
 485 490 495
 Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr
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